

REMARKS

Reconsideration and allowance of the present patent application based on the following remarks are respectfully requested.

By this Response, no claims are amended, added or cancelled. Accordingly, after entry of this Response, claims 1-14 will remain pending in the patent application.

Claims 1-6 and 13 were rejected under 35 U.S.C. §103(a) based on Kutsunai *et al.* (U.S. Pub. No. 2002/0055223) (hereinafter "Kutsunai") in view of Buchanan *et al.* (U.S. Pat. No. 6,984,591) (hereinafter "Buchanan"). The rejection is respectfully traversed.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness at least because the prior art reference (or references when combined) must teach or suggest all the claim limitations.

As conceded by the Office Action, Kutsunai fails to disclose, teach or suggest a second Ru layer in contact with the oxide film. However, Applicant respectfully submits that there are additional features that are absent in Kutsunai. For example, Kutsunai is silent as to a Cu layer formed on the second Ru layer.

The Examiner refers to 95 of Kutsunai as allegedly disclosing, teaching or suggesting a Cu layer formed on a second Ru layer. Specifically, the Examiner equates the Cu layer and the second Ru layer of claim 1 with, respectively, the layer 108A and the lower electrode 110A of Kutsunai. Respectfully, those cited portions of Kutsunai merely disclose that the layer 108 is a composite nitride layer. As such, unlike claim 1, the layer 108 is not a Cu layer.

Furthermore, the Examiner is clearly in error in stating that the layer 108A is formed on the layer 110A (identified by the Examiner as the "second Ru layer" of claim 1). On the contrary, Kutsunai merely discloses that the layer 108A is formed under the layer 110A. The Examiner is respectfully reminded that the word "on" is a preposition that is used as a function word to indicate the location of something - "in contact with and supported by the top surface of." (*See Merriam Webster Dictionary*). As known in the art, the manufacturing process that is used to assemble the layers 108A-110A is a sequential thin layer deposition process in which the layer 114A is formed on the layer 108A, the layer 115A is formed on

the layer 114A and the layer 110A is formed on the layer 115A. In Kutsunai, the oxygen barrier layer 108A is formed on a first protection insulating film 103 (*e.g.*, a TEOS-O₃ film) and a tungsten plug 107. (*See, e.g.*, paragraph 94 and 95 of Kutsunai). Thus, stating that “the layer 108A is formed on the layer 110A” is clearly incorrect. Stating otherwise would give an interpretation that is inconsistent with (a) the plain meaning of the terms “formed on” and (b) the interpretation that those skilled in the art would reach. (*See, e.g.*, MPEP 2111.01 citing Phillips v. AWH Corp., 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*)).

Buchanan fails to remedy the deficiencies of Kutsunai. Buchanan was merely cited as disclosing the use of a Ru to manufacture a lower capacitor electrode. As such, any reasonable combination of Kutsunai and Buchanan cannot result, in any way, in the invention of claim 1.

Claims 2-6 and 13 are patentable over Aggarwal, Buchanan and any proper reasonable combination thereof at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-6 and 13 under 35 U.S.C. §103(a) based on Kutsunai in view of Buchanan are respectfully requested.

Claims 1-6 and 13 were rejected under 35 U.S.C. §103(a) based on Aggarwal *et al.* (U.S. Pat. No. 6,635,497) (hereinafter “Aggarwal”) in view of Buchanan. The rejection is respectfully traversed.

As conceded by the Office Action, Aggarwal fails to disclose, teach or suggest a first Ru layer formed on the dielectric pattern, an oxide film formed by oxidizing an upper part of the first Ru layer and a second Ru layer in contact with the oxide film. However, Applicant respectfully submits that there are additional features that are absent in Aggarwal. For example, Aggarwal is silent as to a Cu layer formed on the second Ru layer.

The Examiner refers to col. 8, lines 53-55 and element 114 of Aggarwal as allegedly disclosing, teaching or suggesting a Cu layer formed on a second Ir layer. Specifically, the Examiner equates the Cu layer of claim 1 with the layer 114 of Aggarwal. Respectfully, those cited portions of Aggarwal merely relate to a plug 114 that contacts the FeRAM capacitor 125 and the source or drain of the transistor. (*See, e.g.*, FIG. 3 of Aggarwal).

However, unlike claim 1, the plug 114 is not formed on the second layer of Ir as erroneously alleged by the Examiner. On the contrary, Aggarwal merely discloses that the plug 114 is formed under the second layer of Ir. As mentioned previously, the Examiner is respectfully reminded that the word “on” is a preposition that is used as a function word to indicate the location of something - “in contact with and supported by the top surface of.”

(See Merriam Webster Dictionary). As known in the art, the manufacturing process that is used in FIGS. 3 and 17 of Aggarwal is a sequential thin layer deposition process in which the first layer of Ir is formed on the barrier layer (*i.e.*, on the barrier layer that is formed on the plug 114), the layer of IrO₂ is formed on the first Ir layer and the second Ir layer is formed on the IrO₂ layer. In Aggarwal, the plug 114 is formed on a liner/barrier layer 114 (*e.g.*, Ti) and a dielectric layer 112 (*e.g.*, SiO₂). (See, *e.g.*, col. 8, lines 48-62 of Aggarwal). Thus, stating that “the layer Cu 114 ...[is] formed on the second Ru layer” is clearly incorrect. Stating otherwise would give an interpretation that is inconsistent with (a) the plain meaning of the terms “formed on” and (b) the interpretation that those skilled in the art would reach. (See, *e.g.*, MPEP 2111.01 citing Phillips v. AWH Corp., 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*)).

As mentioned previously, Kutsunai fails to remedy the deficiencies of Aggarwal. As such, any reasonable combination of Aggarwal and Kutsunai cannot result, in any way, in the invention of claim 1.

Claims 2-6 and 13 are patentable over Aggarwal, Kutsunai and any proper reasonable combination thereof at least by virtue of their dependency from claim 1 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-6 and 13 under 35 U.S.C. §103(a) based on Aggarwal and Kutsunai are respectfully requested.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

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Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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